

CLAIMS

What is claimed is:

1 1. An optical communication system, comprising:
2 an optical transmitter comprising:
3 an error correction encoder, wherein the error correction encoder to
4 output data that is encoded according to an error correction code selected from a
5 predetermined set of error correction codes having differing data transfer rates, and
6 a laser/driver unit coupled to the error correction encoder, wherein the
7 laser/driver unit to transmit optical signals modulated with data from the error
8 correction encoder; and
9 an optical receiver comprising:
10 an optical detector/amplifier to receive optical signals, and
11 an error correction decoder coupled to the optical detector/amplifier,
12 wherein the error correction decoder to decode data according to the error
13 correction code selected in the error correction encoder.

1 2. The system of claim 1, wherein the optical receiver further includes an error
2 rate indicator, wherein the error rate indicator to provide an indication of an error
3 rate of an optical signal received by the optical receiver.

1 3. The system of claim 2, wherein the error rate indicator is coupled to the
2 optical detector/amplifier.

1 4. The system of claim 2, wherein the error rate indicator to provide an
2 indication of a power level of the optical signal received by the optical receiver.

1 5. The system of claim 2, wherein the optical receiver to further provide
2 information related to the error rate indication from the error rate indicator to the
3 optical transmitter.

1 6. The system of claim 5, wherein the error correction encoder to further select
2 an error correction code of the predetermined set of error correction codes in
3 dependence on the information related to the error rate indication.

1 7. The system of claim 6, wherein the optical receiver and the optical transmitter
2 each include a synchronization unit, the synchronization units of the optical
3 transmitter and the optical receiver to provide a communication link between the
4 optical transmitter and the optical receiver that is separate from optical signals
5 transmitted by the optical transmitter and optical signals received by the optical
6 receiver, the optical receiver to use the communication link provided by the
7 synchronization units to provide the information related to the error rate indication to
8 the optical transmitter.

1 8. The system of claim 6, wherein the optical receiver is part of an optical
2 transceiver.

1 9. The system of claim 8, wherein the optical transceiver to further provide the
2 information related to the error rate indication to the optical transmitter via an optical
3 signal sent to another optical transceiver that includes the optical transmitter.

1 10. The system of claim 9, wherein the optical signal sent by the optical
2 transceiver includes tone modulation to provide the error rate indication to the
3 optical transmitter.

1 11. The system of claim 1, wherein the predetermined set of error correction
2 codes includes a selection of no error correction encoding.

1 12. The system of claim 2, wherein the error rate indicator is implemented using
2 the error correction decoder.

1 13. An optical communication system, comprising:
2 an optical transmitter, wherein the optical transmitter includes error correction
3 encoder means for encoding data according to an error correction code selected
4 from a predetermined set of error correction codes having differing data transfer
5 rates; and
6 an optical receiver operatively coupled to the optical transmitter, wherein the
7 optical receiver includes error correction decoder means for decoding data
8 according to the error correction code selected in the error correction encoder.

1 14. The system of claim 13, wherein the optical receiver further includes an error
2 rate indicator, wherein the error rate indicator to provide an indication of an error
3 rate of an optical signal received by the optical receiver.

1 15. The system of claim 14, wherein the error rate indicator is coupled to an
2 optical detector/amplifier of the optical receiver.

1 16. The system of claim 14, wherein the error rate indicator to provide an
2 indication of a power level of the optical signal received by the optical receiver.

1 17. The system of claim 14, wherein the optical receiver to further provide
2 information related to the error rate indication from the error rate indicator to the
3 optical transmitter.

1 18. The system of claim 17, wherein the error correction encoder means selects
2 an error correction code of the predetermined set of error correction codes in
3 dependence on the information related to the error rate indication.

1 19. The system of claim 18, wherein the optical receiver and the optical
2 transmitter each include synchronization means for providing a communication link
3 between the optical transmitter and the optical receiver that is separate from optical
4 signals transmitted by the optical transmitter and optical signals received by the
5 optical receiver, the optical receiver to use the synchronization means to provide the
6 information related to the error rate indication to the optical transmitter.

1 20. The system of claim 18, wherein the optical receiver is part of an optical
2 transceiver.

1 21. The system of claim 20, wherein the optical transceiver to further provide the
2 information related to the error rate indication to the optical transmitter via an optical
3 signal sent to another optical transceiver that includes the optical transmitter.

1 22. The system of claim 21, wherein the optical signal sent by the optical
2 transceiver uses tone modulation to provide the error rate indication to the optical
3 transmitter.

1 23. The system of claim 13, wherein the predetermined set of error correction
2 codes includes a selection of no error correction encoding.

1 24. The system of claim 14, wherein the error rate indicator is implemented using
2 the error correction decoder.

1 25. An optical transceiver for use in a communication system, the optical
2 transceiver comprising:

3 an error correction encoder, wherein the error correction encoder to output
4 data that is encoded according to an error correction code selected from a
5 predetermined set of error correction codes having differing data transfer rates, the
6 predetermined set also including a selection of no error correction encoding;

7 a laser/driver unit coupled to the error correction encoder, wherein the
8 laser/driver unit to transmit optical signals modulated with data from the error
9 correction encoder;

10 an optical detector/amplifier to receive optical signals; and

11 an error correction decoder coupled to the optical detector/amplifier, wherein
12 the error correction decoder to decode data according to an error correction code
13 selected from the predetermined set of error correction codes.

1 26. The optical transceiver of claim 25, further comprising an error rate indicator,
2 wherein the error rate indicator to provide an indication of an error rate of an optical
3 signal received by the optical transceiver.

1 27. The optical transceiver of claim 26, wherein the error rate indicator is coupled
2 to the optical detector/amplifier.

1 28. The optical transceiver of claim 26, wherein the error rate indicator to provide
2 an indication of a power level of the optical signal received by the optical
3 transceiver.

1 29. The optical transceiver of claim 26, wherein information related to the error
2 rate indication from the error rate indicator is provided to the error correction
3 encoder.

1 30. The optical transceiver of claim 29, wherein the error correction encoder to
2 further select an error correction code of the predetermined set of error correction
3 codes in dependence on the information related to the error rate indication.

1 31. The optical transceiver of claim 29, wherein the optical transceiver to further
2 provide the information related to the error rate indication to another optical
3 transceiver via an optical signal sent to the other optical transceiver, the other
4 optical transceiver being the source of the received optical signal.

1 32. The optical transceiver of claim 31, wherein the optical signal sent by the
2 optical transceiver to the other optical transceiver includes tone modulation to
3 provide the error rate indication to the optical transmitter.

1 33. The optical transceiver of claim 25, wherein the error correction encoder
2 comprises a field programmable gate array.

1 34. The optical transceiver of claim 33, wherein the field programmable gate
2 array is dynamically reprogrammable to encode data according to an error
3 correction code selected from the predetermined set of error correction codes.

1 35. A method for use in an optical communication system, the method
2 comprising:

3 measuring a parameter of an optical signal received in the optical
4 communication system, wherein the parameter is indicative of an error rate of data
5 contained in received optical signals;

6 selecting an error correction code from a predetermined set of error
7 correction codes based on the measurement; and

8 configuring the optical communication system to use the selected error
9 correction code.

1 36. The method of claim 35 wherein the predetermined set of error correction
2 codes includes a selection of no error correction coding.

1 37. The method of claim 35, wherein the parameter is a power level of received
2 optical signals.

1 38. The method of claim 35 wherein configuring the optical communication
2 system to use the selected error correction code comprises:

3 encoding data to be transmitted in an optical signal according to the selected
4 error correction code;

5 providing to an intended receiver of the optical signal an indication of the
6 selected error correction code; and

7 transmitting the encoded data.

1 39. The method of claim 35 wherein configuring the optical communication
2 system to use the selected error correction code comprises providing information
3 associated with the selected error correction code to a transmitter of the received
4 optical signal.

1 40. An optical communication system, comprising:

2 means for measuring a parameter of an optical signal received in the optical
3 communication system, wherein the parameter is indicative of an error rate of data
4 contained in received optical signals;

5 means for selecting an error correction code from a predetermined set of
6 error correction codes based on the measurement; and

7 means for configuring the optical communication system to use the selected
8 error correction code.

1 41. The system of claim 40, wherein the predetermined set of error correction
2 codes includes a selection of no error correction coding.

1 42. The system of claim 40, wherein the parameter is a power level of received
2 optical signals.

1 43. The system of claim 40 wherein the means for configuring comprises:
2 means for encoding data to be transmitted in an optical signal according to
3 the selected error correction code;
4 means for providing to an intended receiver of the optical signal an indication
5 of the selected error correction code; and
6 means for transmitting the encoded data.

1 44. The system of claim 40 wherein the means for configuring comprises means
2 for providing information associated with the selected error correction code to a
3 transmitter of the received optical signal.